

REMARKS

Claims 14, 15, and 19 have been canceled, without prejudice, and therefore claims 13, 16 to 18, and 20 to 30 are currently pending.

Applicants respectfully request reconsideration of the present application in view of this Amendment.

It is believed that this Amendment does not raise new issues that would require further consideration and/or search, and also does not raise the issue of new matter. It is also believed and respectfully submitted that this Amendment places the application in better form for appeal by materially reducing or simplifying the issues for appeal. Entry of the foregoing amendment to claim 13 is therefore requested.

On page two (2) of the Final Office Action, claims 13, 14, 16 to 19, 21 and 25 were rejected under 35 U.S.C. §102(b) as anticipated by Rosnowski, U.S. Patent No. 4,099,997 (Rosnowski).

Independent claim 13 now provides that the semiconductor wafer is heated to a high temperature of at least 1200 degrees centigrade while the glass layer is applied so that the dopant from the solid glass layer penetrates into the semiconductor wafer to produce the at least one doped region. As Rosnowski merely refers to annealing borosilicate glass layers on either side of silicon dioxide at 900 degrees Celsius, Rosnowski does not identically describe (or even suggest) each of the features of claim 13.

For at least this reason, it is respectfully submitted that Rosnowski does not anticipate claim 13, or its dependent claims 16 to 18, 21 and 25.

On page three (3) of the Final Office Action, claims 15, 22 and 28 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rosnowski in view of Schwalke, U.S. Patent No. 5,496,765 (Schwalke).

To reject a claim as obvious under 35 U.S.C. § 103, the prior art must disclose or suggest each claim element and it must also suggest combining the elements in the manner contemplated by the claim. (See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir. 1990), cert. denied, 111 S. Ct. 296 (1990)).

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Claim 15 has been canceled, without prejudice, and claims 22 and 28 depend from and incorporate the features of independent claim 13 as presented. As the secondary Schwalke does not disclose or even suggest heating the semiconductor wafer to a high temperature of at least 1200 degrees centigrade so that the dopant from the solid glass layer penetrates into the semiconductor wafer as recited in the context of claim 13, it is respectfully submitted that it does not cure the critical deficiencies of the primary Rosnowski reference discussed above. Therefore, the references relied upon do not disclose or suggest each of the features of claims 22 and 28 as required. For at least this reason, it is respectfully submitted that the obviousness rejections of claims 22 and 28 should be withdrawn.

On page four (4) of the Final Office Action, claims 20, 23, 24, 29 and 30 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rosnowski and in view of Evans Jr. et al., U.S. Patent No. 4,104,091 (Evans) and Weijland, U.S. Patent No. 3,907,615 (Weijland).

Independent claim 13 provides that the applying of the solid glass layer is performed in accordance with a chemical vapor deposition at atmospheric pressure. None of Rosnowski, Evans or Weijland, whether taken alone or combined, disclose or suggest applying the solid glass layer by chemical vapor deposition at atmospheric pressure, it is respectfully submitted that claim 13 is allowable.

Additionally, while the Schwalke reference was cited with regard to the rejection of claim 15 (the subject matter of which has been incorporated into claim 13), Schwalke does not mention or suggest in any way that atmospheric pressure chemical vapor deposition (APCVD) would be advantageous in the context of applying a solid glass layer for diffusion doping as recited in the context of the claim. In contrast, the specification of the present application clearly explains that APCVD is useful in this context to “achieve extremely high dopant concentrations which reach up to the solubility limit of the silicon wafer.” (See Specification, page 1, line 27 to page 2, line 1). The Schwalke reference provides no such motivation, but merely states, without any further explanation, that an occupation layer of doped glass is deposited using APCVD. (Schwalke, col. 4, lines 26 to 28). Additionally, the motivation, as asserted in the Final Office Action, that those of skill in the art would have combined the teachings of Schwalke with Rosnowski to “avoid

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an uncontrolled drive-out” from these layers, is not sustainable since there is no indication that the primary reference (or any of the other references) suffer at all from this technical problem. Since none of Schwalke, the other references relied upon, or the knowledge of those skilled in the art provide any suggestion for applying APCVD in the context of the claimed method -- which is instead supplied solely by disclosure of the present application -- it is respectfully submitted that there would be no motivation for those of skill in the art to combine Schwalke with Rosnowski, Evans and Weijland without referring to the specification of the present application.

For at least these reasons, it is submitted that claims 20, 23, 24, 29 and 30 are allowable over the references relied upon.

On page five (5) of the Final Office Action, claims 26 and 27 were rejected under 35 U.S.C. § 103(a) as unpatentable over Rosnowski in view of Shinohara, JP 59-80928.

The Shinohara reference purportedly refers to forming a non-doped glass layer over a doped substrate. It is respectfully submitted, however, that any review of the Shinohara reference makes plain that it simply does not disclose or suggest heating the semiconductor wafer to at least 1200 degrees centigrade so that the dopant from the solid glass layer penetrates into the semiconductor wafer as recited in the context of claim 13. Accordingly, it does not cure the critical deficiencies of the primary Rosnowski reference. It is therefore respectfully submitted that claims 26 and 27 are allowable over the references relied upon.

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CONCLUSION

In view of all the above, it is believed that rejections of the claims have been obviated, and that claims 13, 16 to 18, and 20 to 30 are allowable. It is therefore respectfully requested that the rejections be reconsidered and withdrawn, and that the present application issue as early as possible.

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Respectfully submitted,
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